

On a *Gracillaria* species from Morocco
with some supplementary notes
on the genus *Gracillaria* HAWORTH
(Lepidoptera : Gracillariidae)

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Abstract

A new Gracillariid species is described from Morocco : *Gracillaria toubkalella* n. sp. The lectotype of *Coriscium norvegiellum* WOCKE, 1893 is designated and the synonymy of this taxon with *Gracillaria loriolella* FREY, 1881 is established.

Résumé

L'auteur décrit une nouvelle espèce de Gracillariidae provenant du Maroc : *Gracillaria toubkalella* n. sp. Il désigne le lectotype de *Coriscium norvegiellum* WOCKE, 1893 et établit la synonymie de cette espèce avec *Gracillaria loriolella* FREY, 1881.

Introduction

In April 1983 I was able to breed some specimens of a Gracillariid species of which I found full grown larvae in twisted *Fraxinus* leaves in the garden of the Grand Hotel du Toubkal at Asni (Morocco, High Atlas). Almost immediately after their capture the larvae began to construct a pure white silken cocoon between the leaves, against the lid of the box in which they were contained or in the edges of that box. The first imago emerged on 20th April 1983. A total of 19 males and 20 females emerged between that date and 29th April. The specimens remained undetermined for about two years, in spite of thoroughly searching the series of Gracillariidae in the museums of Amsterdam, Brussels, Leyden and London and a heavy correspondance with several European specialists on the matter. It became clear that the Moroccan species was new to science and I would like to describe it in this paper as

***Gracillaria toubkalella* n. sp.**

Male : head ochreous, mixed with brown scales, front brown with scattered ochreous scales. Labial palpi upturned, mixed ochreous and brown, with

distinctive ochreous tips. Maxillary palpi short, upturned or porrected, same colour as labial palpi. Antennae dark brown, each segment somewhat lighter towards base. Tegulae and thorax ochreous, with scattered brown scales in front. Forewing groundcolour dark brown, almost black, each scale with grey base and dark brown tip. A very small ochreous spot near base and some scattered ochreous scales near base of inner margin. An oblique white fascia at about 1/3, gradually getting obscure towards costa, and preceded by a small area of ochreous scales above the wings half. Another white fascia towards middle of wing, curved outwards and connected on the inner margin with the first fascia forming the letter U. The second fascia only reaching to middle of wing. Some black tipped scales at inner margin on the white U, forming some small but very contrasting dots. Space in white U filled with ochreous scales to make a uniform ochreous area which extends above second white fascia along costa to well beyond half the wings length. Two smaller ochreous dots on costa towards apex. Some scattered ochreous scales between white U and outer margin. Apical cilia dark brown forming three longitudinal dark lines. Cilia along dorsum grey. Hindwing grey without markings, cilia grey. Fore and mid legs dark brown, with some whitish scales, tibia white with each segment brown tipped. Hindlegs lighter brown with scattered brown and greyish scales, tips of tibia somewhat darker. (see fig. 1)

Male genitalia : tegumen with parallel sides, rounded apically. Tuba analis and subscaphium protruded beyond tegumen. Valva widened apically, ventral margin straight, ventro-apical corner round, outer margin slightly concave, dorso-apical corner rather acute. A distinct heavy chitinised hook at base of costa. Ventro-apical and terminal margins with numerous long setae pointed towards base and costa. Saccus somewhat shorter than valva with two heavy sclerotised ridges towards middle. Aedeagus straight, shorter than valva, pointed apically and somewhat widened basally. Vesica without cornuti. (see fig. 5)

Female : as male, there is no sexual dimorphism.

Female genitalia : Papillae anales rather short, setose ; apophyses posteriores very slender, apophyses anteriores of same shape and length as apophyses posteriores. Lamella postvaginalis very weakly sclerotised. Ductus bursae membranous, very long and slender ; corpus bursae membranous, almost round, a large sickle-shaped signum, pointing towards middle of bursa and widened at its base. (see fig. 7)

Holotype : male, Morocco, High Atlas, Asni, 1150 m, e.l. *Fraxinus* sp. 26-IV-1983, leg. W. O. DE PRINS, in coll. British Museum (Natural History).

Allotype : female, same data, e.l. 28-IV-1983, in coll. British Museum (Natural History).



Figure 1 : *Gracillaria toubkalella* n. sp. : top, Holotype ♂, Morocco, High Atlas, Asni, 1150 m, e.l. *Fraxinus* sp., 26-IV-1983, leg. W. O. DE PRINS ; bottom, Allotype ♀, same data, e.l. 28-IV-1983, both in coll. British Museum (Nat. Hist.).

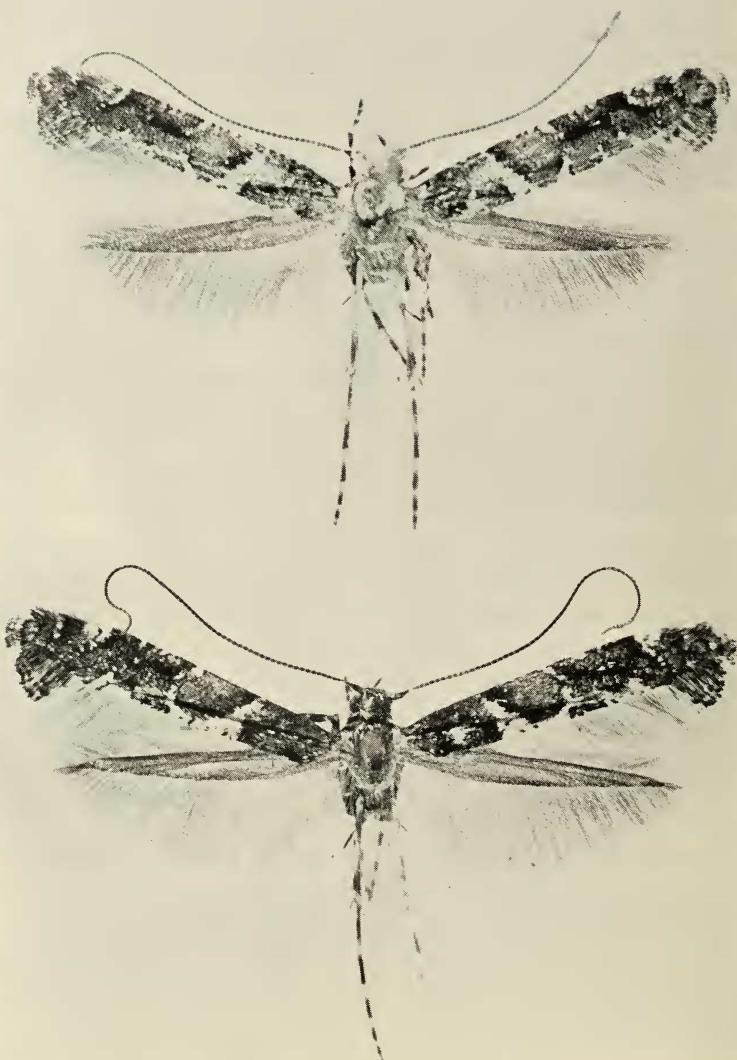


Figure 2 : *Gracillaria ussuriella* (ERMOLAEV, 1977) ; top ♂, Japan, Hokkaido, Fujinosawa, e.l. *Fraxinus mandshurica* 3-VI-1967, leg. S. UMEZAWA, det. T. KUMATA, 1979 ; bottom ♀, Japan, Hokkaido, Sapporo, e.l. *Fraxinus mandshurica* 24-IX-1966, leg. & det. T. KUMATA.

Paratypes: 18 males and 19 females, same data, e.l. between 20 and 29-IV-1983, in my collection. Paratypes have been placed in the collections of the museums of Amsterdam, Leyden, London and Vienna.

The name "toubkalella" refers to the highest peak of the Moroccan mountains, Jebel Toubkal (4167 m). When I revisited the same spot in July 1984, I noticed that the *Fraxinus* tree in the hotel garden on which I found the larvae had been cut down. However, I spotted other trees of the same species in the whole area, especially in the private gardens in the small villages along the main road to Oukaimeden.

Since I only found larvae of the latest instars, I have no information on the mines of the first instars. The mines which I found were occupied by one larva each, except for some cases where two larvae inhabited the same mine. This could always be seen from the outside, because the leaf was then rolled completely, cigarette-formed. The mines usually occupied one side of the leaf, the larva having rolled it longitudinally and spun it to the mid vein. Occasionally, the top of the leaf was rolled towards the base, but this happened mostly with small leaves. Most larvae left their mine for pupation, though I found some cocoons in the mines. The cocoons are spindle-shaped, silvery white.

Gracillaria toubkalella n. sp. is very closely related to *G. ussuriella* ERMO-LAEV, specimens of which I have studied from Japan (Hokkaido). Both species are of the same size and the overall pattern of the forewings is very much alike. However, *ussuriella* shows much more contrast in its colouring due to the almost black scales, contrasting with the pure white and golden-brown scales. The white U is more complete in *ussuriella*, the distal fascia being only interrupted in the middle by some darker scales. The basal fascia of the white U is much broader than in *toubkalella* n. sp. In *ussuriella* the space in the white U is filled with golden-brown scales and there are some pure white strigulae along both wing margins, whereas in *toubkalella* n. sp. there are no white markings except for the white U.

Gracillaria toubkalella n. sp. can be readily distinguished from its two European relatives by its wing pattern and colour. *G. syringella* FABRICIUS has white strigulae both on costal and dorsal wing margins. *G. loriolella* FREY has not the ochreous colouring and shows also white strigulae on both wing margins. The most conspicuous difference in the genitalia lies in the female genitalia: the signum of *Gracillaria toubkalella* n. sp. is widened at its base without forming the two characteristic lobes which are present in *syringella* and *loriolella*.

The genitalia of the species in *Gracillaria* are very much alike and KUMATA "failed to separate them (i.e. the four Japanese species) clearly by these

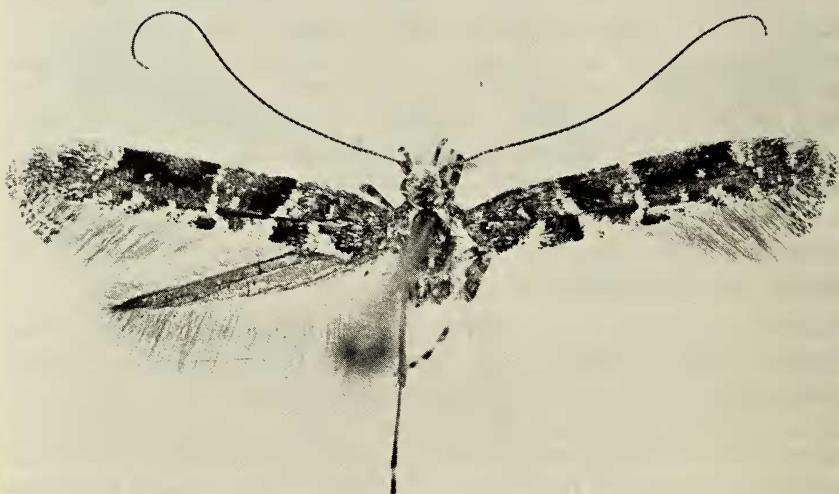


Figure 3 : *Gracillaria loriolella* FREY, 1881 ; top ♂, Austria inf. Z., Klosterneuburg, Kuhau, 31-VIII-1932, leg. I. PREISSECKER, det. E. JÄCKH, 1972 ; bottom ♀, Austria inf., Klosterneuburg, Kuhau, 27-IX-1933, leg. I. PREISSECKER, both in coll. Naturhistorische Museum Wien.

organs." (KUMATA 1982 : 8). However, *G. toubkalella* n. sp. can be distinguished from its relatives by the following characters : valva with concave outer margin, thus making the apex look more pointed than in the other species. Corpus bursae round, signum broader on its base but without the usual pair of elongated lobes.

Additional notes on the genus *Gracillaria* HAWORTH, 1828

VÁRI treated *Gracillaria* HAWORTH, 1828 as a subgenus under the genus *Caloptilia* HÜBNER, 1825. However, representatives of both groups show important and constant differences in the larval chaetotaxy, the pregenital segments of the male, the female genitalia and the wing venation, as stated by T. KUMATA (1982). I follow this author in considering *Gracillaria* as a valid genus. As far as is yet known only three west palearctic species belong to *Gracillaria*, i.e. *G. syringella* (FABRICIUS, 1794), *G. loriolella* FREY, 1881 and *G. toubkalella* n. sp., whereas most of the European species originally described in *Gracillaria* (mostly spelled as *Gracilaria*) actually belong to *Caloptilia*.

V. I. KUZNETSOV stated that *G. loriolella* FREY could either be a junior synonym of *G. syringella* FABRICIUS or a senior synonym of *G. norvegiella* WOCKE (KUZNETSOV 1981 : 182). I obtained a pair of *G. loriolella* FREY on loan from the Natural History museum in Vienna (see fig. 3) and a photograph of a syntype of *Coriscium norvegiellum* WOCKE (see fig. 4), contained in the Zoological Museum of Oslo. There is only one other syntype of *C. norvegiellum* in the Oslo museum, and both specimens are obviously the only representants of this species in Norway, since L. AARVIK could not (yet) find other specimens in Norwegian collections (in litt.). The two specimens unfortunately lack their abdomen, but they match perfectly with the original description. WOCKE writes about only two males which were caught by W. M. SCHØYEN at Tøien on 17th and 28th August 1885. The photographed specimen bares a label "Type" and another "Tøien, 17.8.85". It is clear that this is the specimen that WOCKE had before him when he described *Coriscium norvegiellum* WOCKE, 1893. I hereby designate this specimen as the lectotype of *Coriscium norvegiellum* WOCKE (ISZN, Rules, Art. 74). L. AARVIK has labelled this specimen accordingly.

I do not agree with M. OPHEIM who writes that "the type specimen of *Coriscium norvegiellum* proved to be a form of *Caloptilia syringella*, taken 17-VIII-1885 at Oslo, Tøyen by A. Moe" (OPHEIM 1977 : 11). In fact *norvegiellum* shows a quite different pattern on its forewing which is identical with that of *Gracillaria loriolella* FREY and therefore *Coriscium norvegiellum* WOCKE should be considered as a junior synonym of *Gracillaria loriolella* FREY.

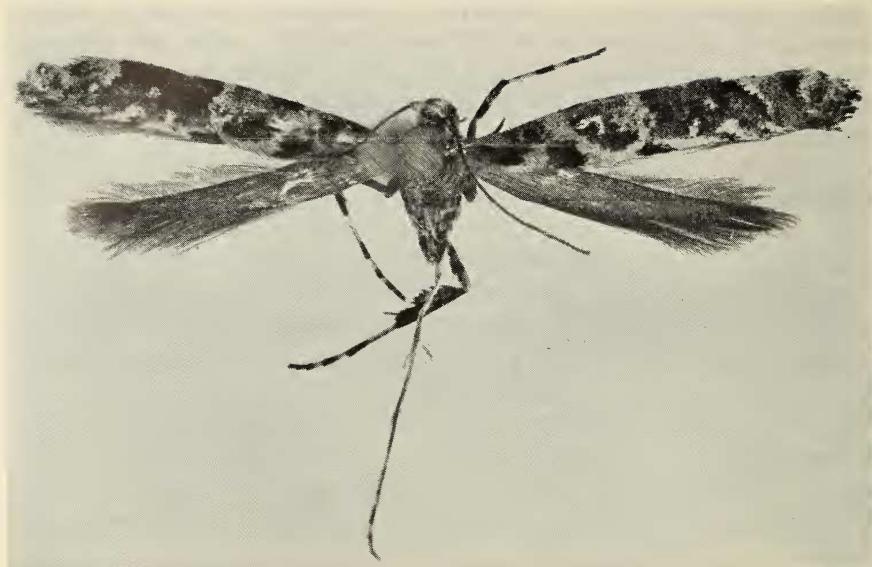


Figure 4 : *Coriscium norvegiellum* WOCKE, 1893, Lectotype (designated in this paper), Norway, Tøien, 17-VIII-1885, leg. W. M. SCHØYEN, in coll. Zool. Museum Oslo.

It is noteworthy that all the species currently included in *Gracillaria* feed on members of the Oleaceae (i.e. *Fraxinus*, *Ligustrum* and *Syringa*). Only *G. syringella* is mentioned to feed very occasionally on *Syphoricarpos* which belongs to the Caprifoliaceae. On the other hand there are only very few true *Caloptilia* species living on Oleaceae : T. KUMATA only mentions *G. cuculipennella* HÜBNER (on *Fraxinus*, *Jasminum* and *Syringa*) in his list (1982 : 32), and this is "a rather peculiar species among the members of the subgenus *Caloptilia*" (KUMATA, 1982 : 32). Until now it was possible to identify seven "true" *Gracillaria* species. The genus as a whole can best be regarded as Palearctic, though one species (*G. syringella* F.) also occurs in North America. I am listing the species currently placed in *Gracillaria* in alphabetical order since their phylogenetic affinities have not been studied yet.

Provisional check list of species currently placed in
Gracillaria HAWORTH, 1828

Gracillaria HAWORTH, 1828 (type species : *Gracillaria anastomosis* HAWORTH, 1828 = *Tinea syringella* FABRICIUS, 1794)
Gracilaria ZELLER, 1839 (unjustified emendation)

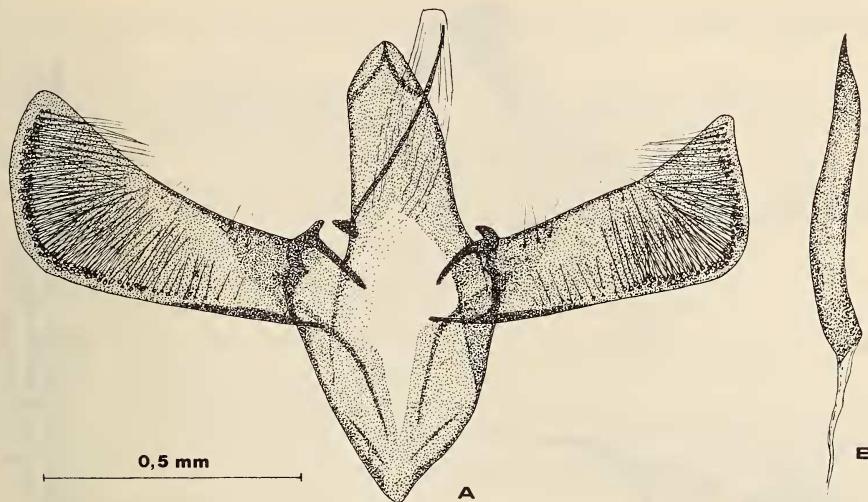


Figure 5 : *Gracillaria toubkalella* n. sp. : A. Male genitalia (WDP-2222, Morocco, High Atlas, Asni, 1150 m, e.l. *Fraxinus* sp., 26-IV-1983) — B. Aedoeagus (ditto).

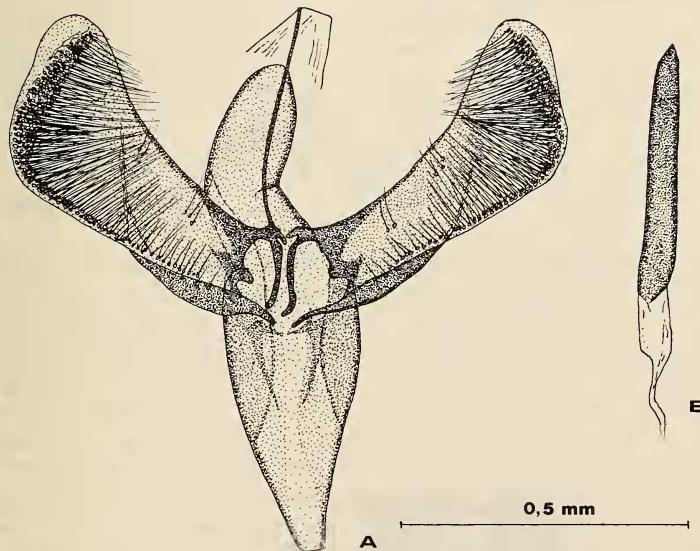


Figure 6 : *Gracillaria loriolella* FREY, 1881 ; A. Male genitalia (E. Jäckh-7162, Mus. Vind. 1004, Austria, Klosterneuburg, Kuhau, 31-VIII-1932) — B. Aedoeagus (ditto).

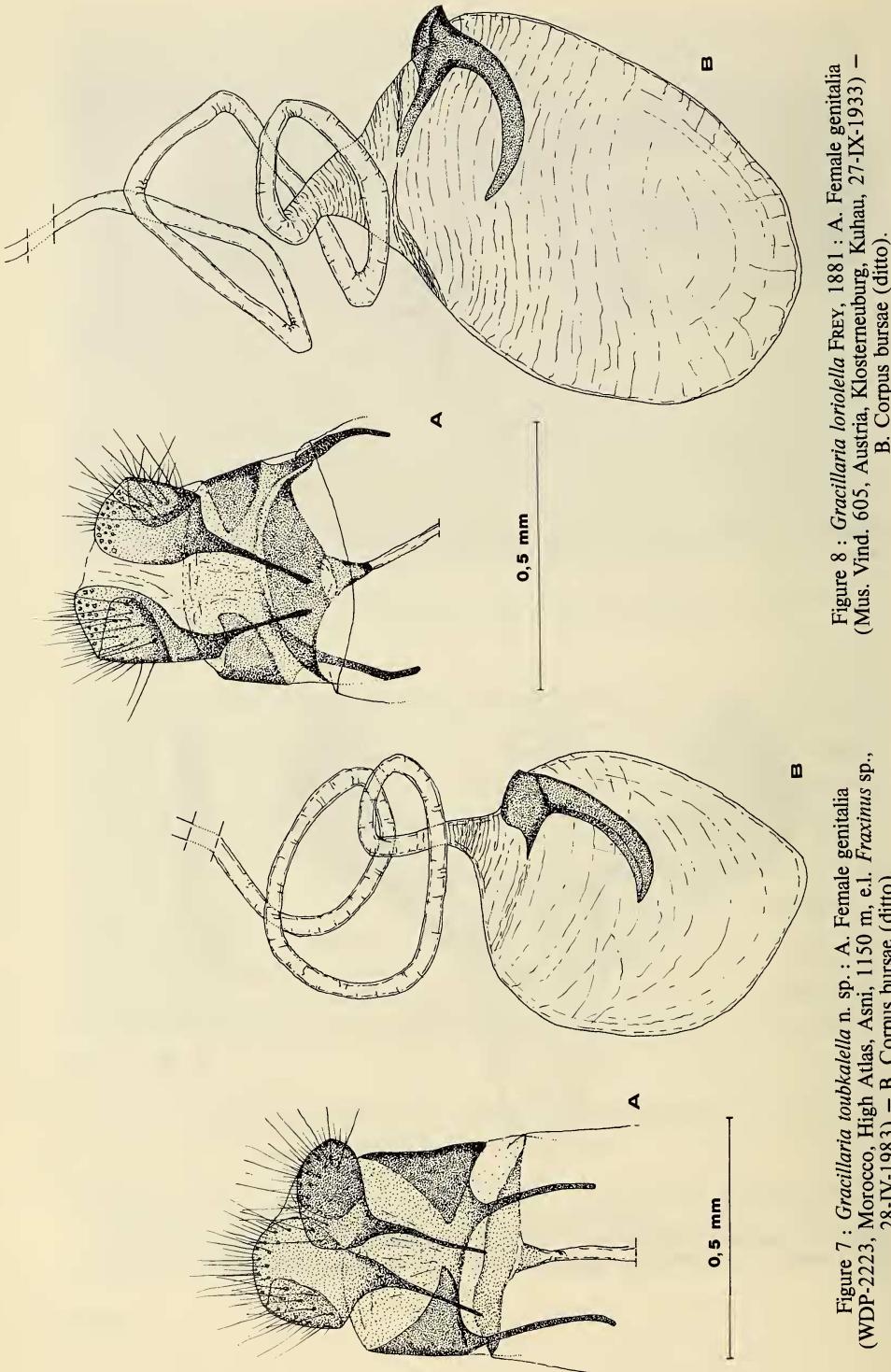


Figure 8 : *Gracillaria loriolella* FREY, 1881 : A. Female genitalia (Mus. Vind. 605, Austria, Klosterneuburg, Kuhau, 27.IX.1933) – B. Corpus bursae (ditto).

Figure 7 : *Gracillaria toubkalensis* n. sp. : A. Female genitalia (WDP-2223, Morocco, High Atlas, Asni, 1150 m. e.l. *Fraxinus* sp., 28-IV-1983) – B. Corpus bursae (ditto).

Xanthospilapteryx SPULER, 1910 (type species : *Tinea syringella* FABRICIUS, 1794)

Gracillaria albicapitata ISSIKI, 1930

= *jezonella* (MATSUMURA, 1931)

Japan (Hokkaido, Honsyu) (*Fraxinus, Syringa*)

Gracillaria arsenievi (ERMOLAEV, 1977)

East-USSR (Primorskij Kraj), Japan (Hokkaido) (*Fraxinus, Syringa*)

Gracillaria japonica KUMATA, 1982

= *syringella* sensu ISSIKI, 1957

Japan (Honsyu) (*Ligustrum*)

Gracillaria loriolella FREY, 1881

= *norvegiella* (WOCKE, 1893) NOV. SYN.

= *rebeli* KLEMENSIEWICZ, 1896

Central-Europe (South Norway, Germany, Austria, Hungary, Switzerland, USSR), Central-Asia (Turkestan, Tadzhikistan) (*Fraxinus*)

Gracillaria syringella (FABRICIUS, 1794)

= *anastomosis* HAWORTH, 1828

= *ardeaepennella* (TREITSCHKE, 1833)

= *ligustri* VALLOT, 1850

Europe, Asia minor, Canada (*Fraxinus, Syringa, Ligustrum*, very occasionally on *Syphoricarpos*)

Gracillaria toubkalella n. sp.

Africa, Morocco (High Atlas) (*Fraxinus*)

Gracillaria ussuriella (ERMOLAEV, 1977)

East-USSR (Primorskij Kraj), Japan (Hokkaido, Honsyu, Kyusyu) (*Fraxinus*)

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Literature

- ERMOLAEV, V. P., 1977. A review of the fauna and ecology of miner-moths (Lepidoptera : Gracillariidae) of the Primorye Territory. *Proc. Zool. Inst. Acad. Sci. USSR* **70** : 98-116 (in Russian).
- FREY, H., 1881. *Gracilaria loriolella* nov. spec. *Mitt. Schweiz. Ent. Ges.* **6** : 146.
- HAWORTH, 1828. Lepidopterae Britannicae, Pars 4. London.
- HERING, E. M., 1957. Bestimmungstabellen der Blattminen von Europa. I-III, 1185 p., 84 pl., Dr. W. Junk, 's-Gravenhage.
- HODGES, R. W., et al., 1983. Check List of the Lepidoptera of America North of Mexico. E. W. Classey Ltd., London, p. I-XXIV, 1-284.
- KLEMENSIEWICZ, S., 1896. Ueber eine neue europäische *Gracilaria*-Art. *Verh. zool. bot. Ges.*, Wien **46** : 212-213.
- KUMATA, T., 1982. A taxonomic Revision of the *Gracillaria* Group occuring in Japan (Lepidoptera : Gracillariidae). *Insecta Matsumurana*, N.S. **26** : 1-186.
- KUZNETSOV, V. I., 1981, in Medvedev, G.S., Opredelitel Nasekomych evropeeskoi tsjasti SSSR. Tom IV, Lepidoptera, Part 2, 788 p., Leningrad (in Russian).
- MEYRICK, E., 1912, in Wytsman, Genera Insectorum, 128, Lepidoptera ; Heterocera, Fam. Gracilariidae, Brussels, 36 p.
- MEYRICK, E., 1912, in H. Wagner, Lepidopterorum Catalogus, Pars 6 : Adelidae, Micropterygidae, Gracilariidae. Verlag W. Junk, Berlin, 68 p.
- OPHEIM, M., 1977. Revision of Microlepidoptera in the collections of Zoological Museum, Oslo, I. *Atalanta norv.* **3** : 5-15.
- REBEL, H., 1901, in STAUDINGER, O. & REBEL, H., Catalog der Lepidopteren des palaearctischen Faunengebietes. II. Theil, Famil. Pyralidae-Micropterygidae. Verlag R. Friedlander & Sohn, Berling, 368 p.
- SPULER, A., 1910. Die Schmetterlinge Europas, 2. Band. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, 523 p.
- RAZOWSKI, J. & T. KUMATA, 1985. Typenkatalog der von S. MATSUMURA beschriebenen Microlepidopteren. *Neue Ent. Nachr.* **17** : 1-28.
- TREITSCHKE, F., 1833. Die Schmetterlinge von Europa, 9. Band, 2. Abtheilung. Verlag E. Fleischer, Leipzig, 294 p.
- VÁRI, L., 1961. South African Lepidoptera 1, Lithocolletidae. *Transv. Mus. Mem.* **12** : 1-238, 112 pl.
- WOCKE, M. F., 1893. *Coriscium norvegiellum*. *Forh. Vidensk. Selsk. Krist.* **13** : 52-54.